

# Chemistry of Life Review Worksheet | Chapter 2 (2.3, 2.4, 2.5)

## Carbon Based Molecules

- 1. In terms of science, what does the term “organic” mean? \_\_\_\_\_
- 2. What is it about Carbon’s atomic structure that makes it “the building block of life”?  
\_\_\_\_\_
- 3. Name the four different types of organic molecules:

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- 4. Define the following and label the following picture:

- a. Monomer:  
\_\_\_\_\_  
\_\_\_\_\_
- b. Polymer:  
\_\_\_\_\_  
\_\_\_\_\_

c. *mono-* = \_\_\_\_\_  
*poly-* = \_\_\_\_\_

d. \_\_\_\_\_

e. \_\_\_\_\_

## Carbohydrates

- 5. List the 3 elements that make up carbohydrates:  
a. \_\_\_\_\_ b. \_\_\_\_\_ c. \_\_\_\_\_
- 6. What is the ratio of these elements to one another? \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_
- 7. Fill in the table for the three major polysaccharides and one monosaccharide used in biology:

Type of Carbohydrate Monomer or Polymer?	Where found?	Characteristics/Function

## Lipids

8. Name the 3 main types of lipids: \_\_\_\_\_

9. What are the main functions of lipids?

a. \_\_\_\_\_

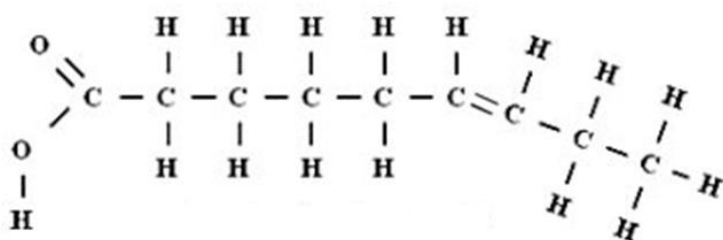
b. \_\_\_\_\_

c. \_\_\_\_\_

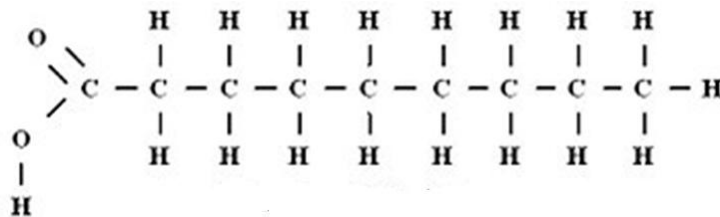
10. Fill in the table for lipids:

Monomer	Polymers		

11. Label as either SATURATED or UNSATURATED:



a. \_\_\_\_\_



b. \_\_\_\_\_

Have fatty acids in which all carbon-carbon bonds are single bonds.

Have fatty acids with at least one carbon-carbon double bond.

c. \_\_\_\_\_

d. \_\_\_\_\_

12. Fill in the table below:

Saturated Fats	Characteristics	Unsaturated Fats
	State (solid/liquid/gas) at room temperature	
	Commonly found in which type of organisms	
	Types of bonds connecting carbon atoms	

13. What is the structure below? Label all parts of this structure including the polar & nonpolar regions.

a. \_\_\_\_\_



**Nucleic Acids**

14. Fill in the table for nucleic acids:

Monomer	Polymers	Functions

15. Fill in the blank: The arrangement of the nucleotides determines the kind of \_\_\_\_\_ created.

16. **Circle** an entire nucleotide on the DNA segment.

17. How many nucleotides are shown in the DNA segment pictured? \_\_\_\_\_

18. Name the three parts of a DNA nucleotide.

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_

19. Fill in the DNA molecules to the right using letters:

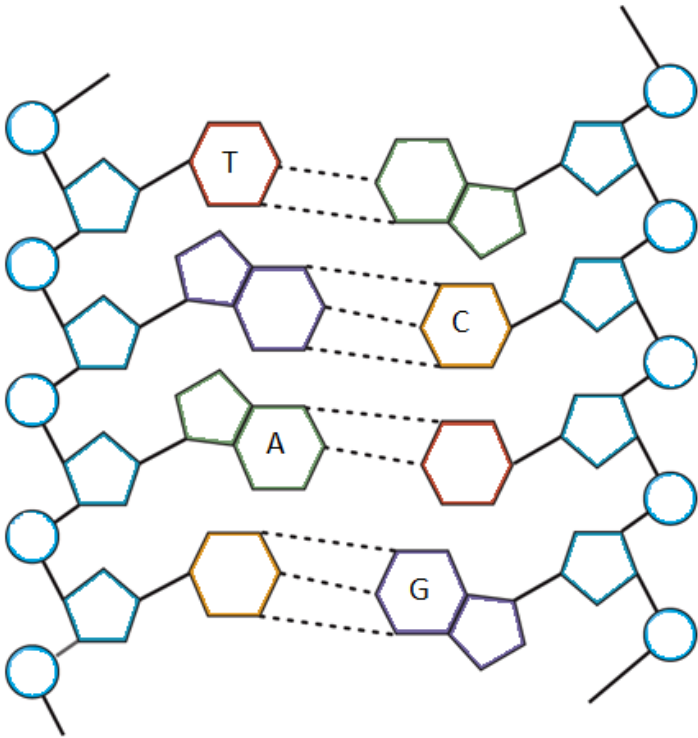
- P (phosphate)

S (sugar)

A (adenine),
- G (guanine)

T (thymine)

C (cytosine)



**Proteins**

20. Fill in the table for proteins:

Monomer	Polymer	Function

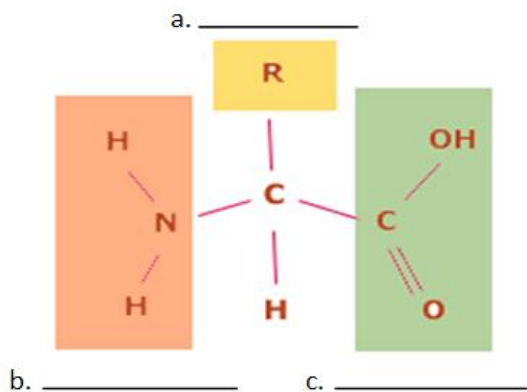
21. How many different amino acids are used to build proteins in organisms? \_\_\_\_\_

22. Fill in the blanks: The \_\_\_\_\_ of amino acids determines the type of protein made. Even one incorrect amino acid placement can change a protein's \_\_\_\_\_ and \_\_\_\_\_.

23. What is the molecule pictured below?  
 \_\_\_\_\_

24. Label the molecule's parts (a – c).

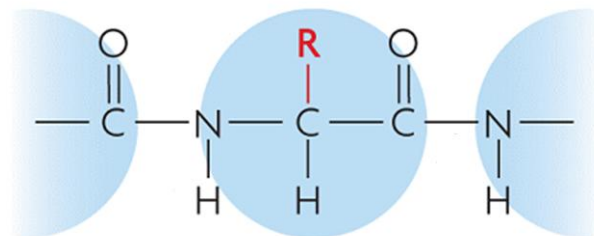
25. **Circle** the group on the structure (pictured below) that is different for every one of these molecules.



26. What type of bonds form between amino acids?  
 \_\_\_\_\_

27. What is another term for protein?  
 \_\_\_\_\_

28. Draw, on the molecules pictured below, 2 arrows where these bonds would be:



## Enzymes

29. Define enzyme: \_\_\_\_\_

30. What is another term for an enzyme? \_\_\_\_\_

31. Why are enzymes important?

a. \_\_\_\_\_

b. Give two examples:

i. \_\_\_\_\_

ii. \_\_\_\_\_

32. What are 3 characteristics of enzymes?

Characteristics of Enzymes	Examples/Explanation

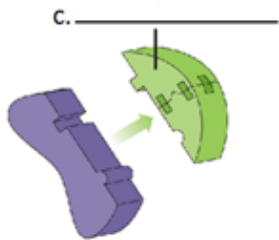
33. What causes enzymes to no longer work? \_\_\_\_\_

\_\_\_\_\_

34. Put the pictures of the reaction in order by placing a 1, 2, or 3 in the box above the picture.

35. Describe what is happening on the lines below the picture.

36. Label the letters (a – c) on the pictures below.

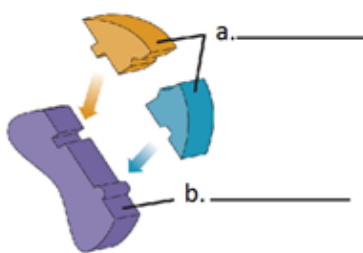


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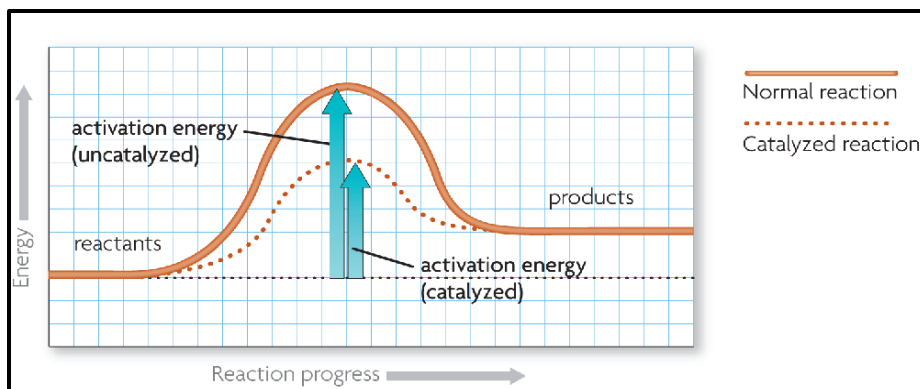
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37. Describe what is happening in the following graph:



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## Chemical Reactions

38. Match the following words with the proper definition:

\_\_\_\_\_ Chemical Reactions

\_\_\_\_\_ Reactants

\_\_\_\_\_ Products

\_\_\_\_\_ Bond Energy

\_\_\_\_\_ Equilibrium

\_\_\_\_\_ Endothermic

\_\_\_\_\_ Activation Energy

\_\_\_\_\_ Exothermic

a. The amount of energy that is needed for a chemical reaction to start.

b. When a reaction takes place at an equal rate in both directions.

c. Change substances into different substances by breaking and forming bonds.

d. A chemical reaction that releases more energy than it absorbs.

e. The substances changed during a chemical reaction.

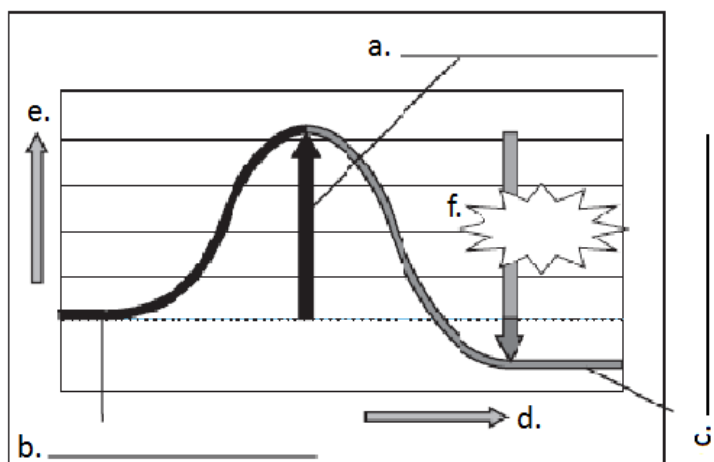
f. The amount of energy that will break a bond between two atoms.

g. The substances made by the chemical reaction.

h. A chemical reaction that absorbs more energy than it releases.

39. For each of the following graphs:

- Label each section (a – f).
- Circle whether each graph represents an exothermic or endothermic reaction.
- Describe what is happening in each graph to support your answer.



Exothermic                      or                      Endothermic

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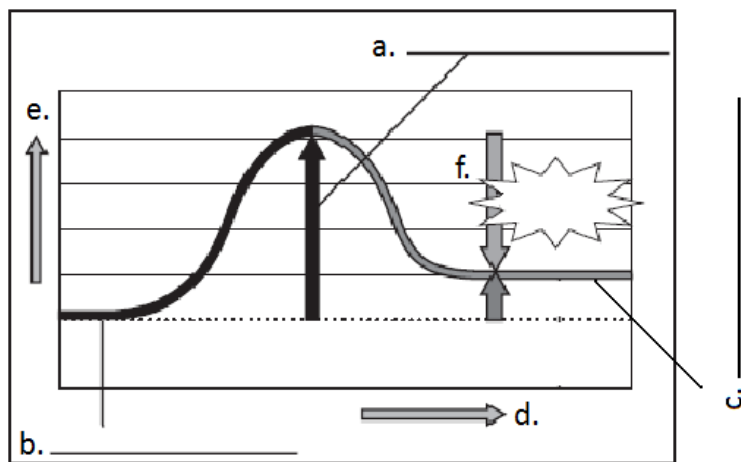
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Exothermic                      or                      Endothermic

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